MODIS sensor Working Group (MsWG) Meeting Summary June 17, 2009

Attendance: Gary Toller, Aisheng Wu, Junqiang Sun, James Kuyper, Hongda Chen, Jack Xiong, Gerhard Meister, Gene Eplee, Chris Moeller, Brian Wenny

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Scheduled Agenda

Item 1: Recent L1B LUT delivery

- Aqua alternative approach (RVS) Collection 6 LUTs (6/16/09)

Item 2: Instrument status

- Terra and Aqua MODIS are in nominal operations.

Item 3: MCST recent activities

- Interim Science Team Report: TEB Status & Performance
  - FPA Temperature – Terra cold FPA performance has been very stable over the mission lifetime with the LWIR FPA actively controlled at 83K. Lifetime Aqua FPA temperature has also been relatively stable (SMIR FPA actively controlled at 83K). In recent years, a slight increase in mean temperature has been observed due to the loss of cooler margin of the radiative cooler.
  - BB Temperature – Overall the BB temperature trends have been stable. The Terra BB is controlled at 290K and shows a 10mK seasonal oscillation and an overall increase of ~20mK over the instrument lifetime. The Aqua BB in comparison is controlled at 285K and shows minimal seasonal oscillations and a lifetime increase of < 5mK . The performance differences between the two instruments is due to a) the BB temperature is more easily controlled at the lower temperature of 285K, and b) Terra uses A-side electronics (Aqua uses B-side) which demonstrated slightly higher noise during pre-launch testing. The scan-by-scan temperature performance of the 12 individual thermistors as also been consistently stable over the lifetime for both instruments.
  - Radiometric Performance – Terra: MWIR bands (B20-25) display little to no gain changes in current configuration (since September 2002). Scan-to-scan response of individual detectors is consistent and stable over lifetime. LWIR bands (B27-36) show gain changes of <5% since September 2002. Scan-by-scan response behavior for all detectors has remained stable over the instrument lifetime except for several detectors that have become noisy since launch. Aqua: Both MWIR and LWIR band gain trending shows changes of < 2% since launch. Scan-by-scan response also is consistent and stable over the mission lifetime.
  - Noise Performance – Since the last Science Team Meeting in May 2008, 2 new noisy detectors have been identified (Terra B27 D2, and Terra B30 D1). NEdT trending has been stable for current non-noisy detectors. Terra PV bands on LWIR FPA (B27-30) have shown periodic increases in noise levels and the majority of detectors that have become noisy since launch are in these bands. Currently there are a total of 23 (out of 160) TEB detectors for Terra which exceed the NEdT specification and are considered noisy [no inoperable detectors]. Aqua currently has 3 detectors considered noisy and 1 inoperable detector.
  - Summary – Overall, the TEB performance has been very good and stable which is encouraging as the instruments continue to operate well beyond their design lifetimes. Topics of concern are the Aqua cooler margin loss and the increasing number of noisy detectors for Terra PV LWIR bands.

Item 4: Around the Table

- Chris inquired as a point of information if it was known why Band 29 Detector 1 for both Terra and Aqua has historically shown striping (small amount) and out-of-family behavior. It is not a major issue and the striping is handled in the destriping algorithm. Brian: MCST isn't currently aware of any issue with this detector, but will take a look at it in detail.
- Gerhard asked for confirmation that the recent Aqua m1 LUT delivery (c5) now includes the correction for the D9 SDSM degradation – which will produce lower radiances. Junqiang: Yes. The D9 degradation correction has been implemented over the last 3 months for c5 and results in a ~0.3% lower m1 (& radiance).
- James: The code change to implement a fix for the sector rotation anomaly is in process and due to be completed soon.

Next Meeting: ~July 1, 2009